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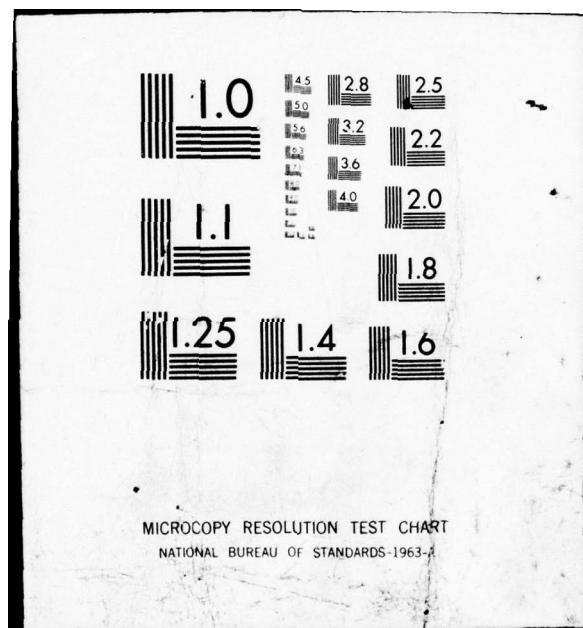
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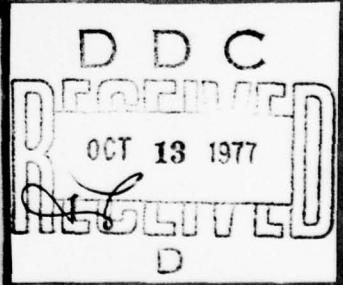
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**GFAE MANAGEMENT PLANNING
FOR PRODUCTION**

**An Executive Summary
of a
Study Report
by**

**Jack G. Remson
Maj. USAF**

May 1973

**Defense Systems Management School
Program Management Course
Class 73-1
Fort Belvoir, Virginia 22060**

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DEFENSE SYSTEMS MANAGEMENT SCHOOL

STUDY TITLE:

GFAE MANAGEMENT PLANNING FOR PRODUCTION

STUDY PROBLEM/QUESTION:

Describe plans for developing procedures and techniques for managing the selection, acquisition, delivery, and control of Government Furnished Aerospace Equipment (GFAE) during the B-1 production program.

STUDY REPORT ABSTRACT:

Although the B-1 Strategic Weapon System Program does not go before DSARC III until July 1975, extensive planning for production must be accomplished prior to DSARC III. This paper describes a plan for developing the GFAE management procedures to be utilized by the B-1 System Program Office during the production phase.

Student, Rank Service
Jack G. Remson
Maj. USAF

Class

73-1

Date

May 1973

EXECUTIVE SUMMARY

The B-1 Weapon System will be the primary nuclear weapon delivery aircraft in the Strategic Air Command during the 1980's. As such, an accurate and reliable navigation and weapon delivery system is essential to meet the stringent B-1 operational requirements of close navigation tolerances and pinpoint weapon delivery accuracies. This avionics system is currently in full scale development by the Boeing Company. The plan is for Boeing to produce the system and provide it to Rockwell International, the weapon system integrator, for installation in the B-1 during the production phase of the program.

Approximately 70% of the B-1 avionics system will be comprised of avionics components and subsystems currently in operational use on other aircraft. These subsystems will be provided to Boeing as Government Furnished Aerospace Equipment (GFAE) for integration with the Boeing produced equipment into the total avionics system. These systems will subsequently be delivered to Rockwell International.

Although the B-1 Weapon System Program does not go to DSARC III until July 1975 for the production decision, extensive planning and preparations must be accomplished prior to that time. One of the most essential areas requiring preproduction planning is the area of GFAE management. Since a large portion of the B-1 avionics system will be GFAE, planning must be begun now to develop and formulate management techniques and procedures for selecting, scheduling, acquiring, delivering, and controlling GFAE during the production program.

Assessment of the B-1 contractors' progress in accomplishing these planning efforts will be evaluated through Production Readiness Reviews (PRR). PRR's are formal inspections of contractors to determine if a system is ready for efficient and economical quality production; if all important production engineering problems have been resolved; and that adequate planning for the production has been accomplished by the contractors. The contractors' GFAE management planning will be tracked and evaluated throughout full scale development via PRR's.

During the remainder of the B-1 full scale development program, the System Program Office (SPO) and the contractors will work jointly to ensure plans and procedures are

developed to adequately manage GFAE during production. Specific planning milestones such as GFAE Requirements Schedule, GFAE Internal Management Plan, Baseline GFAE, GFAE Acquisition, and GFAE Receipt and Inspection will be assessed during PRR's to insure the contractors are actually conducting the required planning to support the request for an affirmative production decision at DSARC III.

Specific GFAE management data requirements will be selected for inclusion in the production contract. This data will provide the SPO and the GFAE procurement agency with the necessary information to properly status and control GFAE acquisitions, deliveries, and acceptance and storage at the contractors' plants.

Finally, a B-1 operating instruction will be processed to define specific responsibilities within the program office for coordinating, evaluating, and supporting contractor GFAE requirements. The operating instruction will also be incumbent upon the cognizant contract administration offices and will delineate additional GFAE management requirements above those specified in the SPO/Contract Administration Office agreement.

GFAE MANAGEMENT PLANNING

FOR PRODUCTION

STUDY REPORT

Presented to the Faculty

of the

Defense Systems Management School

in Partial Fulfillment of the

Program Management Course

Class 73-1

by

Jack G. Remson
Maj. USAF

May 1973

ACKNOWLEDGEMENTS

I want to identify and offer my thanks to the Production Division of the following organizations who provided me insight, advice, and information into the problems of developing plans for managing GFAE during a production program:

ASD/SD-4, Wright-Patterson AFB, Ohio
(F-4 System Program Office)

ASD/SDUT, Wright-Patterson AFB, Ohio
(T-43 Navigation Trainer Project Office)

ASD/SD-69, Wright-Patterson AFB, Ohio
(SRAM System Program Office)

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GFAE MANAGEMENT
FOR PRODUCTION*

Introduction

Purpose

The purpose of this paper is to describe the preliminary plan for managing Government Furnished Aerospace Equipment (GFAE) within the B-1 System Program Office in the production phase. Critical planning factors for managing GFAE during the transition from full scale development to production will be examined to establish a basic framework for developing the GFAE production management techniques and procedures. Only those factors applicable to the B-1 avionics system will be considered in this paper.

Scope

The paper will describe the procedures to be used in forecasting and controlling GFAE requisitions, acquisitions, delivery, reporting and configuration control as the B-1 Strategic Bomber Program transitions from full scale development into the production phase.

* This study represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management School nor the Department of Defense.

The paper will focus on GFAE management, and the procedures described will become part of the Government Furnished Property (GFP) management portion of the Production Plan for the B-1 Program.

The paper is scoped to depict only GFAE management for two reasons. First, approximately 70 percent of the B-1 avionics system will consist of "off the shelf," Air Force provided subsystems. Therefore, it is extremely important that the B-1 System Program Office (SPO) devise and implement an effective plan for managing these resources. Second, the overall GFP Management Plan covers a much broader range of issues than could be adequately addressed in this paper. For example, the GFP Management Plan establishes specific management focal points within the program office and the Air Force Plant Representative Office (AFPRO) who are responsible for monitoring, coordinating, and controlling GFP such as subsystems, components, special tooling and test equipment, Government furnished facilities, and bailed items (1:5-1).

Background

The B-1 Program was ratified in June 1970 and was authorized by the Sec Def to enter into full scale development. The original plan to have Rockwell International, the weapon system integrating contractor,

develop the avionics package as well as the airframe was changed. Instead, a separate contractor, The Boeing Company, was selected to develop the avionics system and provide it to Rockwell International for integration and installation.

Three aircraft are being fabricated during full scale development. The first two aircraft produced will be primarily utilized for Development Test and Evaluation (DT&E) in which the operating envelope of speed and altitude will be demonstrated, stability and control test conducted, and weapon safe separation proved. The third aircraft will be the test bed for the avionics flight test. After DT&E of the avionics system is complete, air vehicle #3 will join the other two in the B-1 DT&E program.

All three aircraft will have a common suit of mission and traffic control avionics which consists of that airborne communication and navigation equipment necessary for basic flight communication, navigation, and safety. In addition to the mission and traffic control equipment, the avionics flight test aircraft, air vehicle #3, will also contain the navigation and weapon delivery equipment developed by Boeing.

The underlying philosophy of the avionics development program is maximum use of off-the-shelf equipment. "Off the shelf" is defined for the B-1 Program as that avionics equipment in operational use or that which is currently being developed for an operational system. This off-the-shelf avionics equipment is being provided Rockwell International and Boeing during full scale development as GFAE. The GFAE for the development program is being supplied from Air Force Logistics Command (AFLC) assets (2), direct procurement by the SPO, and by Military Interdepartmental Purchase Requests (MIPR) from the Navy.

GFAE support procedures for the full scale development phase are described in B-1 Operating Instruction 84-1. These are adequate for the development program, and Rockwell International and Boeing are being supported in a timely manner with the required GFAE. However, more indepth methods and procedures for determing requirements, initiating procurements, status accounting and reporting, and overall GFAE management are required for the production program.

The Problem

Current Situations

As the B-1 Program looks forward toward DSARC III in July 1975, a viable Production Plan must be developed. Of interest are such areas as production control, manpower and equipment scheduling and loading, inventory control procedures, manufacturing and assembly activities, and production schedules. GFAE requisitioning, control and reporting procedures must be formulated and included in the Production Plan.

The success of the production phase is dependent in large measure on the extent and quality of work accomplished during the development phase. Programs that take full advantage of the development phase as a means of making detailed plans and preparation for production are better assured of a successful production program (3:16).

Production Readiness

Air Force Systems Command Regulation 84-2 describes a method for assessing the plans and preparations for production in the form of Production Readiness Reviews (PRR). PRR is a formal evaluation of a contractor to determine whether: a system or equipment under development

is ready for efficient and economical quality production; all critical production engineering problems encountered during development have been resolved; and the contractor has accomplished adequate planning for the production phase (4:1).

The B-1 SPO is conducting a series of mini-PRR's in a continuing effort to evaluate all areas of production readiness at Rockwell International and The Boeing Company. One of the major areas for consideration is the planning for production tasks being accomplished by both contractors, and within this area is the GFAE management element.

Each PRR addresses specific areas of production planning so that overall evaluation of the contractor's production effectiveness can be developed prior to DSARC III. During PRR's, action items are generated by either the Air Force or the contractor. These action items are accounted for by a SPO form called the Request for Action (RFA) (Fig. 1). As these RFA's are acted upon and closed out, they are included in a master PRR file to be used later as part of the overall evaluation or final PRR.

It is incumbent upon the Air Force to identify those avionic subsystems that will be provided as GFAE during production and those which should be contractor supplied.

RFAFIGURE 1CLOSED 9-11-72**ACTION****RFA NO. AF-004**DATED 8-3-72REV PAGE 1 OF **1. SUBJECT:**

AVIONICS GFAE

PRR NO. MT-02**2. THE PROBLEM:**

Additional information is required to support NR planning.

3. REFERENCES: Material PTP, Line Item 67**4. AF NR REQUESTED ACTION:**

AF to provide a list of all Avionics GFAE required in support of the B-1 Production Program.

TS Cole

APPROVED

R. McClain-Material
ORIGINATOR/OFFICE

PRR #6

REQUESTED COMPLETION

5. NR AF COMMENT: Capt. M. EdelbluteDATE 8-3-72 ACCEPTED Preliminary List to be provided IN WORK REJECTED IN SCOPE OUT SCOPE**6. AGREED ACTION:**ACTIONEE Maj. RemsonDUE 9-8-72

7. APPROVED

August Kelley
USAF

8/4/72

DATE

NR ASSOC PGRM MGR

8/4/72

DATE

REPLY

RFA NO. AF-004
DATED 8-3-72
DUE 9-8-72
PAGE 1 OF 1

SUBJECT: Avionics GFAE

The attached is a tentative list of avionics GFAE contemplated for use in the B-1 Production Program with the change to the IFF Subsystem:

Change IFF as follows:

Delete: Receiver Transmitter, Radio
RT-728A/APX-64(V); Mounting MT-3092/APX-46(V);
Test Set, Transponder TS-1843A/APX;
Mounting MT-3513A/APX and Switch,
Radio Frequency SA-1474A/APX

Substitute:

Receiver - Transmitter, Radio RT-1063A/APX-101(V)
(In Accordance With McDonnell-Douglas Specification CP 76301A
328A605A and Exhibit YFEA-1 Dtd 14 April 1972)
and Mounting MT- /APX 101
(Hard or Soft to be Determined)

CONTINUING ACTION
 ACTION COMPLETED

James Schleifer 9-11-72
ACTIONEE DATE
For: J. R. Remson, May, USAF

3 August 1972

98

AIRBORNE GOVERNMENT FURNISHED PROPERTY LIST
2-1 AVIONICS SUBSYSTEM

MISSION AND TRAFFIC CONTROL

UHF Radio Set AN/ARC-109(V)

Receiver Transmitter
Mount
Control-Receiver Transmitter
Selector Antenna

HF Radio Set AN/ARC-123(V)

RT-967
MT-3323
C-7425
C-4808/ARC

Collins Radio Specification 568-2849-001
" " "
" " "
MIL-S-38160B, 11 Sept 1968 Amend 1

10 Apr 70
" "
" "
26 Jun 69

Receiver Transmitter
Control Radio Set
Mount
Amplifier/Power Supply

Intercom AN/AIC-27

RT-822
C-7426
MT-3660
AM-4573

Exhibit SENXY 64-1
" "
" "
" "

Microphone Amplifier
Crew Station Control Panel
Extention Unit
Central Control Unit

Exhibit ENVCA 71-17, Amend 1, Amend 2
" "
" "
" "

ILS AN/ARN-108

Receiver Unit
Mounting
Control

Exhibit ENVG 71-15, Rev #4
" "
" "

2 Aug 71, 16 Nov 71, 2 Aug 71, 16 Nov 71, 6
" 14 Feb 72

VACAN AN/ARDN-84

Receiver Transmitter
Control Radio Set
Mount
Converter

IFC AN/APX-64

Receiver Transmitter
Mounting Control Panel
Test Set, Transponder
Mount, Receiver
Switch, Radio Frequency

Beacon AN/APX-78

Receiver Transmitter
Control Radar Transp
Heat Exchanger

Secure Voice

Security Equipment

Transponder Computer (with Internal AC Power Module)

Mounting
Code Changer Key
Inverlogator or Computer

INT'L ADE AN/ABA-50

Antenna Amplifier Relay Assembly Mounting

MIL-N-81207 1 Nov 1968
Amend 12 Sep 1969

RT-728A/APX-64(V)	DOD-AMMS 64-318	7 Dec 1966
MT-3092/APX-46(V)		26 May 1966
C-7483/APX-64(V)	DOD AMMS 67-361/DOD 65-357	27 Aug 1967
TS-1843A/APX-		
MT-3513A/APX-		
SA-1474A/APX-		

CD-FW ZE00079DR1 7 Apr 1970

NSA CSEEB-13B (C) Oct 1967
NSA CSEEB-17A (C) June 1969

UHF/Rescue Beacon

Radio Set AN/PRC-90

MIL-R-81493

18 July 1969

Miscellaneous

Switch, Radio Frequency

Indicator Course

Indicator Course

SA-521 A/A

ID-250

ID-387

MIL-S-25879

MIL-C-5824A

MIL-I-9229, Amend 3

12 Feb 1968

11 Mar 1952

15 Apr 1970

NAVIGATION AND WEAPON DELIVERY

Doppler Radar AN/APN-185

Electronic Unit, Radar

MX-7904

AS-2130

MT-3912

CD/FW 2E000129BR2(C)

"

"

Inertial Platform

D2AGM20129-2 Rev B(S)

17 Dec 1969

Radar Altimeter AN/APN-194

Receiver Transmitter

Indicator Height

Antenna

RT-1015

ID-1760

AS-2595

MIL-A-81605A

Amend 1

30 July 1971

15 Dec 1971

Forward Looking Radar, AN/APQ-144

Antenna Assembly AS-2123/APQ-114
Control Antenna C-7486/APQ-114
Control, Radar Set C-7857/APQ-114
Pedestal, Antenna AB1035/APQ-114
Synchronizer, Electrical SN-449/APQ-144
Modulator-Receiver-Transmitter MD-843/APQ-144
Control, Antenna-Indicator C-6500/APQ-113
Indicator-Recorder IP948A/APQ-114A
Rack, Electrical Equipment MT-3384/APQ-113

TA/TF Radar, AN/APQ-146

Computer, Terrain Following CP917/APQ-128
Antenna-Receiver, Radio AS-2136/APQ-128
Control, Radar Set C-7510/APQ-128
Amplifier-Power Supply AM-4915/APQ-128
Synchronizer-Transmitter SN-519/APQ-128
Indicator, Terrain Following IP-1012/APQ-134A
Rack, Electrical Equipment MT-3917/APQ-128

ZE12139AR4 (C)

ZE00139AR4 (C) 10 Nov 1970
" " "
" " "
" " "
ZE12139RL (V) 26 Oct 1969
" " "
" " "
" " "
ZE12135A (C) 2 May 1970
ZE00135BR3 (C) 5 Mar 1971
" " "
" " "
" " "
AE0004BR5 (C) 10 Sep 1965
ZE00135BR3 5 Mar 1971

Stores Management Set

Coded Switch Set A/A37A-8 (V)
Controller (DCK-167/A37A-8 (V))
Switch, Code Enabling (DCK-168/A37A-8 (V))
Dummy Connector Plug (TTK-293)
Dummy Connector Plug (ADR-346)

However, it is not possible to segregate all subsystems in this manner at this time since several questions about the proposed subsystems must be answered. Some of the questions are: will they still be in production; if not, what additional costs will be incurred to restart production; will more advanced systems be available; how will they be acquired? The RFA (Fig. 1) was a request by Rockwell International for the Air Force to identify all avionics GFAE required in support of the B-1 Production Program. Since many of the questions stated above have not been answered, only a preliminary list of GFAE could be provided.

Each mini-PRR is tailored to explore a small facet of the overall production readiness planning, such as materials and processes, production schedules, producibility, facilities, or GFP. Prior to each PRR, an agenda of the subjects to be covered is agreed to by the Air Force and the contractor. A result of the PRR planning and process is the generation of Production Transition Plans (PTP) by the contractors. The PTP's graphically depict the contractor's efforts in developing production schedules, technical review schedules, make or buy plans, facility utilization plans, production management, GFP management plans, and other production oriented planning. Each contractor has consolidated

the PTP's into a PRR network chart which portrays his composite schedule for accomplishing production planning. One of the line items of the network chart is for GFP management.

Requirement

Planning for GFP management will be initialized through the PRR/PTP process at Rockwell International and at The Boeing Company. Although the complete suit of GFAE cannot be identified at this time, the management procedures can be formulated and defined so that they will be available for incorporation in the production contracts at the time production decision is obtained.

The Plan

Overview

The GFAE management plan will be developed during the latter stages of full scale development, and it will be a coordinated effort of the SPO and the contractors. The plan will describe the procedures, directives and techniques necessary to identify, acquire, deliver and control the configuration of GFAE utilized in the B-1 production program. Actions will be assigned and progress monitor toward accomplishing the total Production Plan during Production Readiness Reviews. Descriptive GFAE management procedures will be incorporated in the Production Plan.

The initial step in developing the GFAE management plan will be to provide each contractor a GFAE Production Transition Plan task sheet (Fig. 2) which requires the contractor to formulate plans and present rationale in support of the plans during periodic PRR's. These GFAE PTP task sheets will correspond to the GFP line items of the PTP network charts.

Identification

The Boeing Company is currently in full scale development of the B-1 avionics system. In performing

FIGURE 2

GFAE PTP

GP-XX GFAE Internal Management Plan

B-1 plan for Government Furnished Aerospace Equipment (GFAE) establishes B-1 contractor procedures and controls for managing GFAE during the production program. The plan describes the internal processes for identifying, programming, receiving, testing, utilizing and controlling all Government provided property for the B-1 production program.

GP-XX GFAE Production Baseline

Joint AF/contractor effort to identify and establish firm B-1 production GFAE configuration based on system tests, equipment availability, and other requirements.

GP-XX Detail GFAE Requirements Schedule (DD-610)

Contractors will submit firm GFAE requirements to reflect quantities and need dates to support air vehicle production rate. Schedules should contain requirements for all GFAE including installs, spares, data and training requirements.

GP-XX GFAE Acquisition

Interfaces with Air Force milestone to initiate procurement actions leadtime away on contractor on-dock delivery date depicted in GP-XX, Detail GFAE Requirements Schedule.

GP-XX GFAE Receipt and Inspection

Implementation of GFAE Management Plan (GP-XX) for continuing management of GFAE including receiving and storage procedures, acceptance test plan, and reporting procedures as described in the Contract Data Requirements List (DD-1423).

GP-XX GFAE Management

Continuing management of GFAE assets within contractors and AF throughout production phase of B-1 Program.

this effort Boeing is tasked to design and develop the controls and displays, computer hardware and software, and the weapons management subsystem. However, the most technically demanding requirement of the development is integrating these Boeing produced subsystems with the various avionics subsystems supplied by the Government. In fact many of the key components of the B-1 avionics system are GFAE: inertial platform, forward looking radar, radar altimeter, and terrain following radar. One of the innovative requirements of this development program is the 200 hour demonstration of the total integrated system in a hot mockup prior to the avionics flight test.

It is assumed that during production Boeing will be the B-1 avionics contractor and will produce and supply the integrated avionics system to Rockwell International for installation in the aircraft. Therefore, identification of GFAE for production will be a joint B-1 SPO/Boeing effort.

GFAE identification will necessarily be a continuing process of elimination and selection due to out-of-production and availability problems with some subsystems during the production time frame. However, due to acquisition lead time and possibly some development work, the GFAE

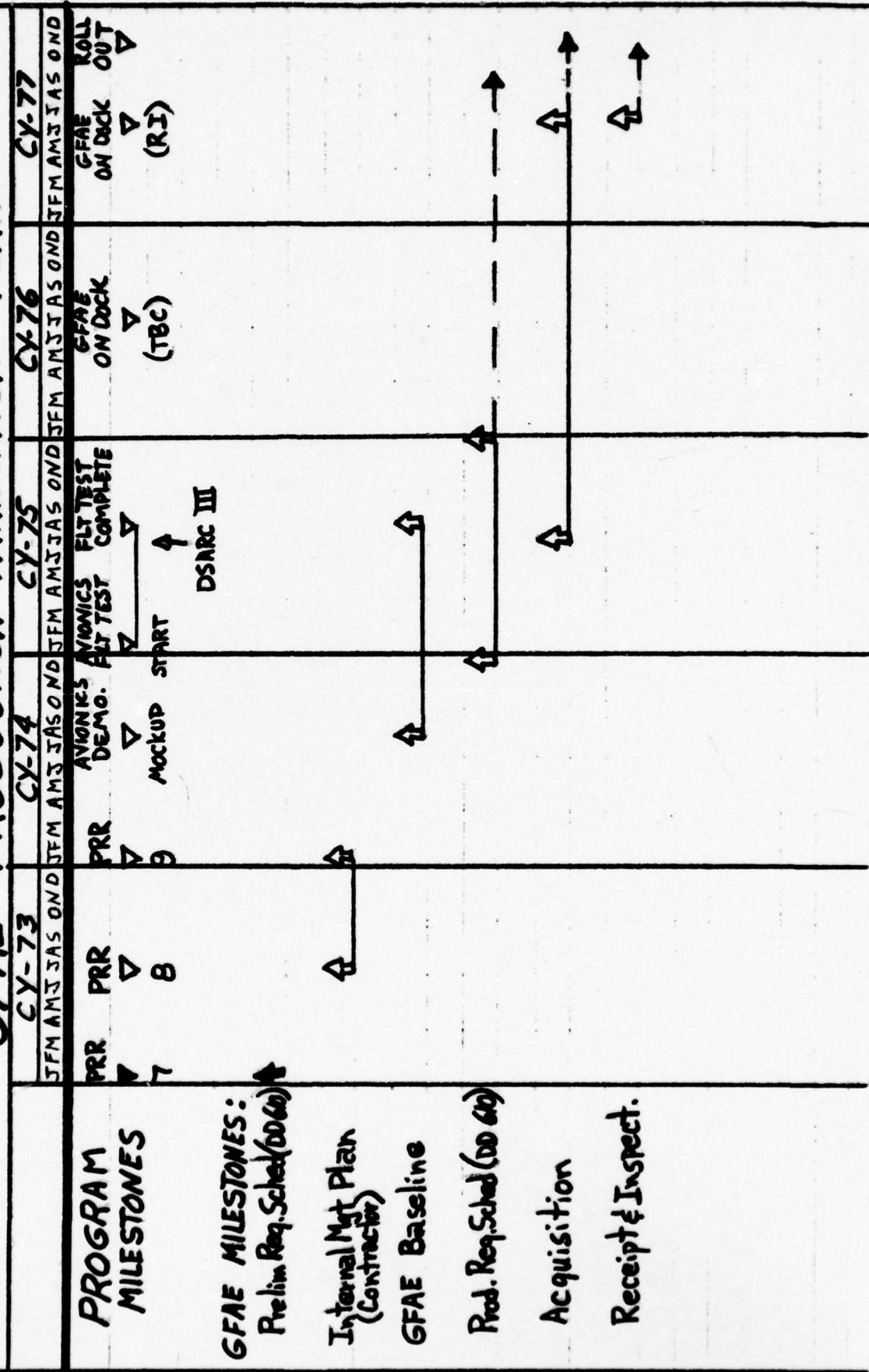
baseline should be established by August 1975 (Fig. 3). (Fig. 3 is a preliminary PTP for GFAE.) This baseline must include, as a minimum, the subsystem, nomenclature including each component; the most current subsystem specification, amendments and dates; current manufacturer; and last production unit cost. This information may be obtained from the Consolidated Aerospace Equipment List (5) if the equipment is currently being provided as GFAE; or industry will be queried through GFAE vendor questionnaires. (Appendix I).

GFAE Requirement Schedule

Once the GFAE baseline has been established, the contractor will submit to the SPO a set of DD Form 610's, GFAE Requirement Schedules, which describe the GFAE requirement per subsystem in relation to the aircraft production delivery schedule. These forms will be used by the SPO and the GFAE procurement personnel to estimate availability, lead times, funding requirements, and delivery dates. SPO approved DD-610's become the basis for the issuance of Purchase Requests to the GFAE buying organizations; thus, Purchase Requests initiate the GFAE acquisition process.

FIGURE 3

GFAE PRODUCTION TRANSITION PLAN



GFAE Acquisition

After receipt and approval of the contractors' GFAE requirements (DD-610), the SPO will either initiate procurement action in-house for the GFAE or prepare a procurement package for issue to another procurement organization. The procurement package consists of the approved DD-610's, the equipment specification, the statement of work, a Contract Date Requirements List (CDRL/DD-1423), and the necessary funding authority.

It is extremely important that responsible organizations within the SPO specify their data requirements and insure these requirements are called for in the GFAE contract, including the desired distribution. Cognizant SPO engineering personnel, especially the integration engineers, should screen the CDRL to insure pertinent engineering data will be forthcoming. Another important data consideration is that the B-1 contractors are made aware of what technical data (drawings and specifications) are available through Government sources for the GFAE especially for the newly developed equipment.

To reiterate, success of the production program depends to a great extent on GFAE support. Therefore, it is imperative that the SPO maintain close surveillance of GFAE acquisitions performed by other organizations.

The SPO should maintain a copy of each GFAE contract within the Production Division, Configuration Management Division, and Procurement Division. Responsible SPO engineering organizations should have a copy of the GFAE contract CDRL. The SPO should conduct GFAE management reviews with the procurement organizations monthly, and SPO engineers should participate in technical reviews at the GFAE manufacturer's plant as required. Finally, the SPO should receive management reporting type data from the GFAE manufacturers so that independent evaluations of the GFAE acquisition management can be made by the SPO to identify support problems.

Configuration Control

Methods for controlling changes to peculiar GFAE (used on only one weapon system) or common GFAE (used on more than one weapon system) are well established. The regulatory document which covers these change actions is Aeronautical Systems Division (ASD) Supplement 1 to AFSCM 375-1. The procedures in this document will be utilized during B-1 production even though MIL-STD-480, 481, and 483 have essentially replaced AFSCM 375-1. The discussion which follows assumes that the GFAE contract contains the product type GFAE baseline.

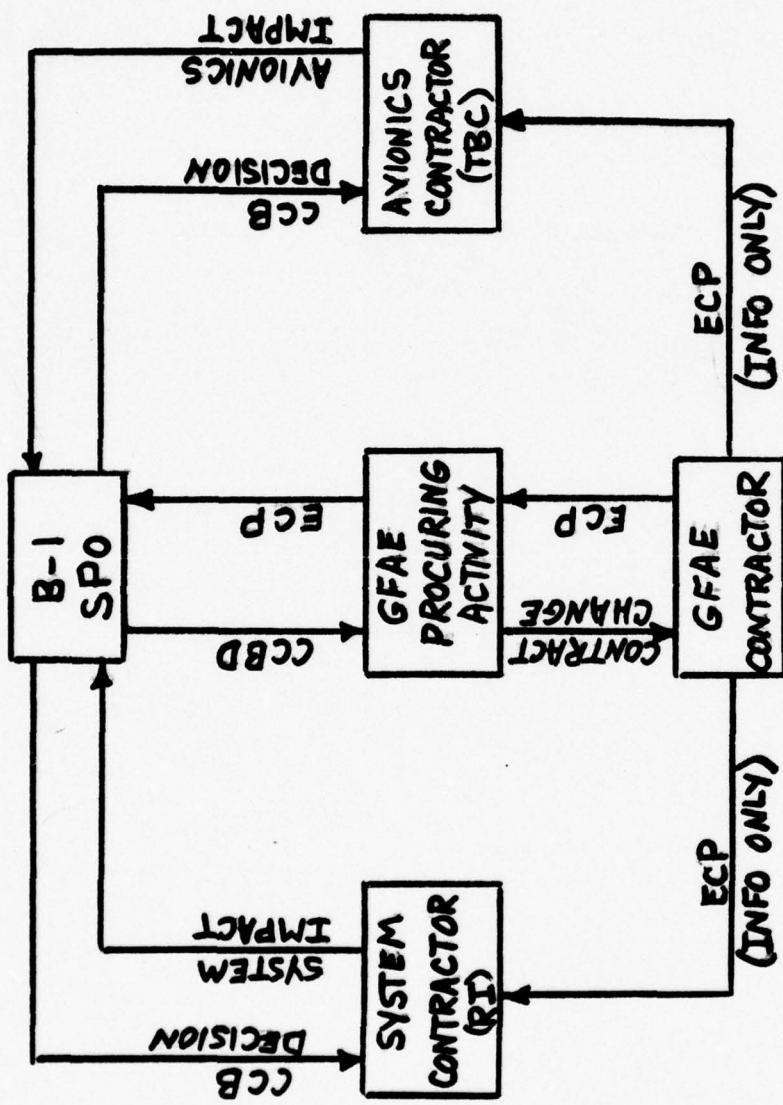
All GFAE contracts will call out MIL-STD-480 for configuration control of engineering changes; and under the changes clause of the contract, the GFAE contractor will be required to submit Engineering Change Proposals (ECP) for all Class I changes (6:8).

If the equipment is utilized only on the B-1, the GFAE contractor will submit the ECP to the procuring agency (SPO or other) who will forward it to the B-1 SPO for Configuration Control Board (CCB) action.

Concurrently, the GFAE contractor will send copies of the ECP to Rockwell International and to the Boeing Company who will provide the B-1 SPO with statements of the ECP impact on the aircraft and avionics systems (Fig. 4).

If the equipment is utilized on other weapon systems as well as on the B-1, the GFAE procuring agency will forward the ECP to all using organizations (other SPO's and project offices) for their evaluation and coordination (Fig. 5). The GFAE procuring agency will conduct the CCB for common equipment, and each SPO and/or project office will participate in the CCB. The GFAE procuring organization must attempt to satisfy the requirements and internal program guidance of all programs concerned when conducting CCB's for common GFAE. Therefore, the B-1 SPO may have to trade-off some B-1 performance requirements to insure equipment compatibility for all GFAE users.

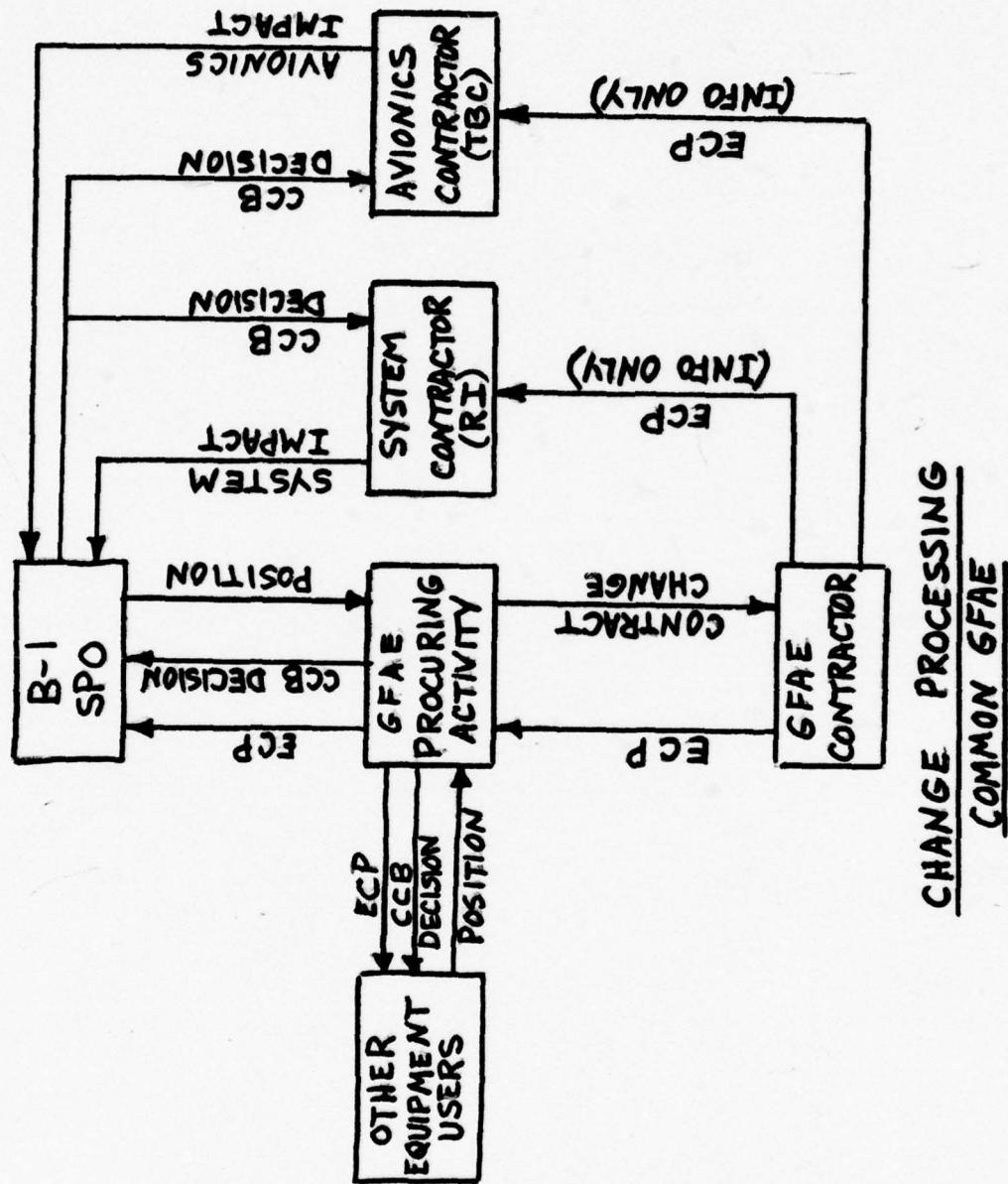
FIGURE 4



CHANGE PROCESSING

B-1 ONLY

FIGURE 5



ECP impacts on aircraft and avionics systems will be considered by the B-1 SPO when conducting or participating in GFAE CCB's. Again, trade-offs in performance, logistics support, and costs will have to be made by the B-1 SPO in determining overall impacts of GFAE ECP's on the B-1 weapon system.

GFAE Delivery

The B-1 GFAE will be procured using SPO approved specifications which will either restate the current GFAE performance requirements if they are adequate or call out B-1 peculiar performance parameters and levels. The GFAE contractors will perform reliability and qualification tests as called for in the specifications and acceptance test plans. The GFAE procuring agency will be responsible for managing the GFAE production programs to meet the B-1 performance requirements. Memoranda of Agreement (MOA's) will be initiated between the B-1 SPO and the procurement organizations to delineate the specific responsibilities and task of each organization in relation to GFAE support of the B-1 production program.

The cognizant AFPRO at the GFAE contractor's plant will be delegated the responsibility for assuring that the various qualification tests are conducted in accordance with the acceptance test procedures and that the equipment

has successfully met the specified performance requirements prior to acceptance by the Government (ASPR 1-406). (7:1-92)

Two things must occur at the B-1 contractors prior to delivery of any production GFAE. First, the contractors' Government Property Control System must be validated by the AFPRO such that the contractors' storage facilities, accounting and control procedures, material handling equipment, and security measures meet the minimum standards for storage and protection of Government property.

Second, the B-1 SPO must insure that the same acceptance test procedures utilized at the GFAE contractor's plant for sell-off are used at the B-1 contractors for incoming acceptance tests. Acceptance test procedures must be validated and verified for compatibility and currency by the SPO and the AFPRO.

Receipt Plan

GFAE will be received by the B-1 contractor utilizing a combination of existing control procedures plus additional procedures required to provide expeditious handling. Acceptance test procedures will be developed by the contractor and approved by the B-1 SPO and they will be compatible with the GFAE sell-off procedures. The approved procedures will be made a portion of the Quality Assurance Plan within the B-1 production contract.

All GFAE will be received into Government stores and given a visual, dimensional, and compatibility inspection to insure the equipment received is actually what is described in the shipping documentation and that no external damage is in evidence. The equipment will then be stored in a secure area until called for by the functional production element in accordance with the DD-610.

Functional acceptance tests will be performed by contractor personnel under AFPRO surveillance prior to installation or integration. Failed items will be returned to GFAE storage for disposition. A failure review board made up of contractor quality engineering and AFPRO industrial, quality, and engineering personnel will make a determination within 24 hours as to who has repair responsibility: B-1 contractor, GFAE contractor, or Government. GFAE reject/failure reports (DD 611-1) will reflect all subsystem failures and these reports will be forwarded to the GFAE procurement office monthly. The B-1 contractor will initiate shortage reports (DD 611) if it is determined that GFAE support posture is approaching a critical level. The GFAE contract CDRL will call for these reports to be submitted monthly to the GFAE procuring agency.

B-1 Production Contract

The B-1 contractors are primarily responsible for developing and formulating the procedures, plans, and reports mentioned in the Plan section of this paper. The contractor will be required to submit these plans and procedures as part of their production proposal. At that time the actual quality assurance plans, acceptance test procedures, GFAE control procedures, and other pertinent GFAE management requirements will be agreed to by both parties and incorporated in the definitive contract.

Operating Instruction (Appendix II)

Appendix II is the B-1 Operating Instruction (OI) which will be the primary intra-program office directive governing Government Furnished Property management. This operating instruction will be applicable to all B-1 System Program Office functions including those located at the contractors' plants. The operating instruction will also be applicable to the affected functions within the AFRPO by initialization of the memorandum of agreement between the B-1 SPO and the cognizant AFPRO.

According to SPO policy, the operating instruction will be thoroughly coordinated by the applicable functions within the SPO and the CAO prior to approval by the program director. In this way all interested organizations may submit their comments and recommendations to the staff office responsible for coordinating the operating instruction. All areas of contention will be resolved, and all organizations will have the opportunity to become familiar with its procedures before the operating instruction goes into effect.

Conclusion

One of the critical factors of a successful B-1 production program is a well managed GFAE support effort. Since 70 percent of the B-1 avionics system will be comprised of off-the-shelf equipment provided by the Government, it is essential that qualified equipment and data be supplied to the B-1 contractor on time and in the proper amounts required to support the production schedule.

Although the production decision, DSARC III, is not scheduled until mid 1975, GFAE management planning for production must be begun now. Not only is planning required early, but the suit of GFAE must be selected, acquisition begun, control and reporting procedures formulated, and management techniques devised.

Planning for production within the B-1 program is being accomplished via the Production Readiness Review (PRR) process whereby the B-1 contractors are developing the plans for transitioning into production, and they are being evaluated on their readiness and capability to produce the B-1 effectively and efficiently. PRR is an excellent management tool for this evaluation because it permits the program office to explore each production process incrementally and in micro-fashion.

This inturn allows the SPO to be more flexible and dynamic in selecting the subjects to be covered at each PRR and in manning the PRR team with experts from the various organizations and disciplines within the SPO, Air Force laboratories, Contract Administration Offices, and other Government staff agencies.

Planning for GFAE management during the production phase will be a continuing topic for PRR and other SPO/contractor technical and management reviews throughout the remainder of the full scale development phase.

Not only must the suit of equipment be selected, but various trade-offs must be made, as to the availability, suitability, and procurement costs of the selected equipment against similar questions for avionics equipment currently under development. In fact, the most troublesome problem concerning GFAE selection is what equipments will be in production during the 1975-1980 time frame coupled with what new equipment will be far enough along in development for incorporation into the B-1 avionics system.

As the B-1 SPO and B-1 contractors attack the problem of GFAE management, each has specific tasks to perform; but neither can develop the plans and procedures independently. There must be close cooperation and coordination so that problems can be surfaced and resolved

prior to large commitments of resources toward an unfeasible objective. In other words, the SPO and the contractors must be frank and open with each other so that the proper equipment is selected, the equipment performance meets the B-1 specified requirements, and the management procedures are designed to insure timely and adequate support for the production program.

In final analysis, the people directly involved in developing the procedures and techniques for GFAE management will have the greatest affect on the outcome of the effort. Contractor and SPO personnel must realize the importance of GFAE support to the overall B-1 production program success. The B-1 SPO will continue to emphasize this during PRR's and other GFAE support related reviews.

Appendix I

B-1 PRODUCTION PLANNING ACTIVITY GFAE VENDOR INQUIRIES

1. Guidelines:

a. The equipment listed in attachments 1 and 2 to this document (not included) are those high value, critical items to be used by the B-1 associate contractors during the production phase. Attachment 1 is the GFAE list for the offensive avionics contractor. Attachment 2 is a listing of high value, critical items for the airframe contractor.

b. The B-1 production phase commences in FY76.

c. Funding for acquisition of GFAE for B-1 will come out of B-1 program production funds except for those cases where development dollars are authorized.

d. The need dates for GFAE will be Jul 76 for the offensive avionics contractor.

e. The B-1 SPO will be the focal point for overall management of production GFAE issues/concerns.

f. The inquiries are directed down to the LRU level vs the GFAE subsystem (SRU) level.

g. The quantity of equipment involved is for support of 241 production aircraft (241 ship sets).

2. Current Production Status:

a. What is the planned termination date based on current contracts?

b. What is the expected termination date based on realistic AF/DOD requirements? Are there any breaks in the production line?

c. Which weapon systems is the LRU used on? When does this support stop? What quantities of LRUs are required for this support?

d. How many configurations of the equipment exist?

e. Was the actual quantity of equipment held in Air Force, DOD, or Navy inventories?

f. What is the current projected planning for this hardware, including current rate and projected rates and capacity for 1975-80 timeframe not including support of the B-1?

(1) What tooling from the present program would be available to support the B-1 Production Program? Will additional tooling be required? What is the lead time for obtaining this tooling?

(2) What facilities are required to support B-1 production?

(3) What is the optimum production rate?

g. Method of Procurement:

(1) What is the buying office?

(2) Is there a requirement to compete re-orders of this equipment?

(3) In the case of anticipated or actual termination, what is the procurement plan for restarting or continuation of the production line? What are the critical decisions and timelines involved in this plan?

(4) Is there a configuration control management system operating IAW Mil-Std 480? If not, what configuration management system exists?

(5) Is there an existing parts control program operating IAW Mil-Std 891? If not, what system exists?

(6) Is there a program for doing production reliability testing per Mil-Std 781B, Test Plan XXIX, or any other specification?

(7) What AGE equipment is being procured? What AGE is available in the inventory to support the B-1? Are Technical Requirements Documents (TRDs) being procured under the contract?

(8) What training equipment or services are being provided?

(9) What technical services are being provided by the vendor?

3. Costs (in 1972 dollars): What are the per unit costs for:

- a. Present GFAE configuration, production line still operating July 1975.
- b. Present GFAE configuration, production line requires restart begins in July 1975.
- c. GFAE requires redesign to increase hardness to B-1 specifications and restart required.
- d. Funding requirement, by fiscal year, to support the B-1 Production Program.
- e. Identification of special problems requiring FY74 funding to support the B-1 production schedule.

4. Hardness/Reliability Redesign:

- a. Will redesign of the equipment be required to meet B-1 hardness or reliability specifications?
- b. Is there any estimate of the resultant increase in costs for redesign?
- c. What are the timelines associated with this kind of redesign?

5. Alternative GFP Items:

- a. Is there an alternative/replacement item that is:
 - (1) Available for integration during B-1 avionics RDT&E effort (present to July 1975)?
 - (2) Available for integration after Production Decision in Jul 75 (Jul 75 - Jul 77).
- b. What is the new equipment? What is its development and/or production status? Does it meet B-1 hardness and reliability specifications? What system is it intended for?
- c. What is its per unit cost (1972 dollars)?
- d. Will any of the LRUs be receiving technological updating that will affect its overall performance characteristics such as reliability, power consumption, weight, or heat dissipation?

6. Timelines and Schedules:

a. Is there a schedule for describing the key events and decisions for each item of GFAE?

b. For alternative GFAE items, is there a developmental schedule highlighting key program dates and events?

Appendix II

AERONAUTICAL SYSTEMS DIVISION B-1 OPERATING INSTRUCTION
Deputy For B-1
Wright-Patterson Air Force Base, Ohio 45433

GOVERNMENT FURNISHED PROPERTY (GFP)

PURPOSE: This Operating Instruction establishes the procedures and responsibilities for managing the acquisition of Government Furnished Property (GFP) to support the B-1 Weapon System.

1. Applicability: This Operating Instruction applies to organizational elements within the Deputy for B-1.

2. Definitions: Government Furnished Property consists of Government Furnished Equipment (GFE); Government Furnished Aerospace Equipment (GFAE); Aerospace Ground Equipment (AGE); and spare/repair parts. The following definitions are provided for a common reference in the B-1 Program:

a. Contractor Furnished Equipment (CFE) - is equipment procured or otherwise provided by the contractor for the performance of a contract, title to which is vested in the Government.

b. Government Furnished Property (GFP) - is property in the possession of or acquired directly by the Government and subsequently delivered or otherwise made available to the contractor. GFP may be subdivided into facilities, equipment, or materials.

(1) Government Furnished Facilities - are industrial buildings, structures, or improvements used for production, maintenance, research, development or test, including real property, industrial plant equipment, and other depreciable items which are made available to the contractor.

(2) Government Furnished Equipment (GFE) is classified as:

(a) Government Furnished Aerospace Equipment (GFAE) - is that portion of GFE which, under the terms of Air Force aerospace contracts, is procured by applicable procurement agencies and furnished by Air Force directly to the aerospace vehicle contractor or another GFAE contractor for inclusion in the aerospace vehicle or other item of GFAE.

(b) Aerospace Ground Equipment (AGE) - is defined as all ground support equipments required to make the B-1 weapons system operational in its environment.

(c) Other Equipment - Special Test Equipment (STE) and standard items which do not come under the category of facilities, materials, GFAE, or GFE.

(3) Government Furnished Materials (GFM) - is that portion of GFP which is provided to prime weapon system contractors (excluding GFAE) for incorporation into or attachment to an end item to be delivered under a contract or which may be consumed in the performance of a contract. It includes, but is not limited to, raw and processed material, parts, components, assemblies, and small tools and supplies.

c. Spare/Repair Parts - is an integral, manufactured, and replaceable part of a piece of machinery or equipment; the part being furnished normally for replacing a part worn or damaged in service.

d. Standard Items - are equipment and material currently identified and available in the Government inventory. Items are identified by Federal Stock Number (FSN).

e. Non-Standard Items - are those items which are not currently in the Government inventory and/or not identified by FSN.

3. Duties and Responsibilities:

a. Directorate of Procurement and Production (YHK)

(1) The Production Division (YHKD) is the focal point for GFP management within the Deputy for B-1. YHKD will manage the acquisition of all standard and non-standard GFP.

(2) YHKD will:

(a) Coordinate acquisition of all standard and non-standard items.

(b) Monitor status of GFP deliveries and resolve GFP acquisition problems as necessary to meet B-1 program requirements.

(c) Establish working agreements with cognizant contract administration organizations to insure plant-level surveillance and control of GFP.

b. Directorate of Integrated Logistics Support (YHL)

(1) YHL will be the focal point within the B-1 SPO for all logistics support matters in relation to GFP.

(2) YHL will coordinate on GFP selections and acquisitions to insure operational logistics support requirements are identified and incorporated in the GFP.

(3) YHL will maintain surveillance over GFP provisioning to insure operational support of the B-1.

c. Directorate of Program Control (YHP) will:

(1) Insure that GFP requirements are included in the B-1 financial plan and budget requests.

(2) Coordinate and participate in the requirements process to allow sufficient lead time to get GFP requirements into the budget cycle.

(3) Initiate Program Authorization (PA) as required for GFP acquisition.

d. Directorate of Engineering (YHE) will:

(1) Review all GFP requirements for suitability, technical adequacy, quantities, and need dates.

(2) Consider availability, program cost, and schedule requirements when recommending GFP for program utilization.

(3) Attach data requirements for YHC consolidation and identify special instructions to be included in the CDRL.

(4) Ensure accurate and adequate acceptance test plans (i.e., incoming test requirements, performance test requirements, etc.) are available and implemented by the contractor prior to receipt of GFP items.

(5) Ensure the GFP items are correctly tested and baselined by the contractor utilizing the acceptance tests.

e. Director of Configuration Management (YHC) will:

(1) Review GFP requirements for configuration and data availability.

(2) Coordinate and schedule change proposal processing and provide direction to the GFP buying organizations for change implementation.

(3) Provide SPO data requirements to the GFP buying organizations.

f. Directorate of Test and Deployment (YHT) will review all GFP requirements for compatibility of GFP items with test requirements.

g. Contract Administration Office (AFPRO/DCASO) will:

(1) Control GFP at the contractor's plant in accordance with ASPR Section XIII and ASPR Appendix B.

(2) Establish and maintain records of GFP items requisitioned, items received, and unit cost of items received.

(3) Periodically request the contractor to initiate contract change proposal to update the GFP lists and adjust Contract Target Cost and Fee for items requested and received which are not on the lists and negotiate these contract changes if authorized by Contracting Officer delegation.

(4) Provide YHJD status reports as specified in applicable Memoranda of Agreements.

(5) Coordinate Defense Industrial Plant Equipment Center (DIPEC) screenings and the acquisition of DIPEC controlled items as appropriate.

DOUGLAS T. NELSON
Major General, USAF
Deputy for B-1

ANNOTATED BIBLIOGRAPHY

1. Air Force Systems Command, Production Management, AFSCM 84-3, 14 May 1971.
This manual prescribes policies, direction, and procedures for Air Force Systems Command production management. It provides guidance for the production management elements of the development divisions, test centers, and program offices.
2. Department of the Air Force, Logistic Support of Research, Development, Test, and Evaluation Activities, AFR 67-19, 2 June 1971.
This regulation establishes policy, authority, responsibility, and procedures for providing standard and nonstandard equipment and items from Air Force Logistics Command assets to support each major command and separate operating activity that performs or supports research and development, testing, or operational testing and evaluation.
3. Air Force Systems Command, Air Force Production Management Study, December 1971.
This is a study of current and on-going production management procedures within functional production elements within the Air Force Systems Command.
4. Air Force Systems Command, Production Readiness Review, AFSCR 84-2, 23 November 1971.
This regulation provides direction and procedures to functional production management elements within the Air Force Systems Command for conducting Production Readiness Reviews of weapon system contractors.
5. Aeronautical Systems Division, Consolidated Aerospace Equipment List, CAEL.
List of airborne avionics subsystems being provided as Government Furnished Aerospace

Equipment. List is updated quarterly to reflect current equipment utilization by nomenclature, numerical identification, weapon system utilization, production unit price, and component manufacturer.

6. Department of Defense, Military Standard, Configuration Control - Engineering Changes, Deviations and Waivers, MIL-STD-480, 30 October 1968.

Configuration control requirements established by this standard apply during the engineering or operational systems development, production, and operational life cycle periods of configuration items.

7. Department of Defense, Armed Services Procurement Regulation, ASPR, 1973 Edition.

This regulation establishes for the Department of Defense uniform policies and procedures relating to the procurement of supplies and services under the authority of Chapter 137, Title 10 of the U.S. Code.